ON THE OCCURRENCE OF *LINDSAEA CULTRATA* (WILLD.) SW. AND *L. MALAYENSIS* HOLTT. FROM NICOBAR ISLANDS, INDIA

The occurrence of *Lindsaea cultrata* (Willd.) Sw. and *L. malayensis* Holtt. in Nicobar Islands, India has been confirmed. Critical observations on their distribution, identity, key to the two confused taxa with detailed descriptions and illustrations are provided. The occurrence of *L. cultrata* (Willd.) Sw. from South India is yet to be confirmed.

Kramer (1971, 1972) during the course of of revision of *Lindsaea* group for Flora Malesiana and Old World respectively doubted the occurrence of *Lindsaea cultrata* (Willd.) Sw. from South India and put a mark of interrogation against S. India under distribution. Later Dixit and Ghosh (1983) confirmed his views during their revisionary studies on Indian basis.

In the course of usual identification of the ferns received recently by the Cryptogamic Unit from Central National Herbarium, Howrah collected from the Nicobar Islands in the year 1984, the authors came across a specimen which on critical scrutiny with the literature turned out to be *Lindsaea malayensis* Holtt. but while incorporating the specimen into the herbarium, authors found that the specimen in general appearance is different from the specimens available in the folder, and this led the authors to work out more critically the correct identity of the two taxa.

Prof. K. U. Kramer in 1977 identified the two Nicobar specimens as *Lindsaea cultrata* (Willd.) Sw. but the authors during revisionary studies did not agree with him and re-identified as *L. malayensis* Holtt. in the year 1980. The two determinavit slips on one sheet along with the typical specimens of *Lindsaea cultrata* (Willd.) Sw. from other countries of occurrence available in Herb. CAL revealed that the identification made by Prof. K. U. Kramer was correct and only the recent collection of *Sanjappa & Chatterjee* 17756 from Nicobar Islands represents true *L. malayensis* Holtt.

It is a well established fact that the earlier Indian specimens identified as *Lindsaea cultrata* (Willd.) Sw. turned out to be *L. odorata* Roxb. ex Griff. Although it is surprising that the type of *L. cultrata* (Willd.) Sw. (= *Adiantum cultratum* Willd.) collected from 'Malabar' *s.l. s.n.* in B. Herb. Willdenow (cf. Kramer *l.c.*) might have lead Prof. Kramer to record its occurrence from the South India doubtfully, since no subsequent collections are made from the area till to-day. We examined specimens of *Lindsaea cultrata* (Willd.) Sw. from Sri Lanka and other countries and therefore, occurrence of *L. cultrata* (Willd.) Sw. from South India in future is not ruled out.

Dixit and Ghosh (1983) pointed out the confusion regarding the identity of *L. cultrata* (Willd.) Sw. and *L. malayensis* Holtt. but not clarified the differences properly, and therefore, a key to distinguish the two taxa, their description and illustrations of diagnostic characters are provided to facilitate easy identification.

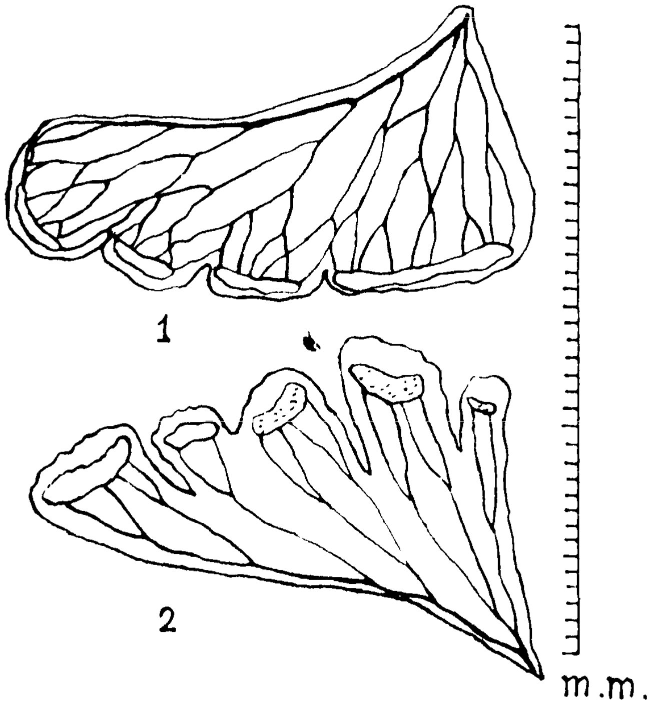
Key to the Species

1 a. Fronds with the upper prinnules little reduced half as long as the lower ones, dark-green in colour, lower edge of the mature pinnules slightly ascending, veins regularly anastomosing. . . .. *L. cultrata*

1 b. Fronds with the upper pinnules scarcely narrowed towards apex, pale to dark olivaceous in colour, lower edge of the mature pinnule slightly decurved, veins free rarely anastomosing. .. .. *L. malayensis*

Lindsaea cultrata (Willd.) Sw., Syn. Fil. 119. 1806 ; Kramer, pl. Males. ser. II. 1(3) : 222. 1971. *Adiantum cultratum* Willd., Phytogr. 14, t. 10, f. 2. 1794. *Lindsaea decomposita* Willd., Sp. pl. 5 : 425. 1910 ; Holtt., Rev. Fl. Mal. 2 : 333f. 92. 1954, *L. malayensis* *sensu* Dixit & Ghosh, proc. Indian Acad. Sci. (pl. Sci) 92(3) : 255. f. 44-45. 1983 (*non* Holtt. 1930). (Fig. 1)

Rhizome short-creeping, scales reddish-brown, triangular, 5-7 striate in basal part, long uniseriate at apex. Fronds caespitose, stipes shining stramineous, lamina bipinnate (rarely simple pinnate) with 1-2 pinnate a side and usually pinnae obliquely patent-oblong, 15-20 x 2.5-3.5 cm ; pinnules contiguous, 20-40 to a side, patently ascending, herbaceous, dark-green when dry, trapeziforme to rhombic, the larger ones 10-15 x 4-7 mm, almost 2-3 times as long as wide, hardly narrowed, basal decurved, upper margin straight or convex outward, little narrowed. Fertile pinnules upper margin with 3-5 narrow, oblique shallow incisions upto 1 mm deep, smaller pinnules more or less entire, sterile pinnules-margin shallowly crenate, a few upper pinnules strongly reduced ; veins immersed, regularly anastomosing forming series of areoles. Sori interrupted by the incisions, indusium pale-greenish, little reflexed.



Figs 1-2. Fertile pinnules showing venation and soral part.

1. *Lindsaea cultrata* (Willd.) Sw. (*Balakrishnan* 3978). 2. *L. malayensis* Holtt. (*Sanjappa & Chatterjee* 17756).

Specimens examined : India. Great Nicobar-South Nicobar : Shompen village, ± 75, 23.7.1976, *Balakrishnan* 3978 (PBL, dupl. CAL) Inland forests, ± 120 m, 26.7.1976, *Balakrishnan* 4037 A (PBL) Sri Lanka : Central Province, *M. N. Beckur* 59 (CAL), Sudagalla, 3500 ft, 2.2.1981, *W. Hancock* 20 (CAL), Thomas Moore Fern Herb. *s.l. s.n.* Accession No. 5482 (CAL). Malay Peninsula : Perak-top of rocks 3000-4000 ft, Aug. 1885. *King's collector* 8044 (CAL-2 specimens) : Lower camp Gunony Batu Patch, *Wray Jr.* 1003 (CAL) Larut, 2000 ft, July, 1881, *Kunstler* 1991 (CAL) ; Kuttang, *s.l. s.n.* Accession No. 5484 (CAL) ; Malaya *s.l.* 275 (CAL). Malay Archipelago-Hota : Bahru, Sept. 1880. *Kunstler* 649 (CAL).

Distribution : India (Nicobar Islands). According to Kramer (1971) South India, Sri Lanka (Ceylon) Botcle Tobago, S. Thailand, Malesia-Malay Peninsula, Singapore, Riouw Is. S. China-Sea Is. Sumatra, Mentawei Is., Banka, West Java, Borneo, Celebes, Philippines.

Lindsaea malayensis Holtt., Gard. Bull. *s.n.* 5 : 69. f. 8. 1930 : Rev. Fl. Mal. 2. 235. f. 194. 1954. (Fig. 2)

Rhizome short-creeping, scales brownish, narrowly triangular 3-5 seriate at base, long uniseriate at apex. Fronds tufted, stipes stramineous, quadrangular, 20-30 cm long. Lamina pauci-jugate bipinnate with one odd lateral pinna to 2 pairs and a conform to terminal one (rarely simple pinnate) : lamina 15-30 x 10-20 cm, pinnae spreading not centiguous, 7-20 x 2-2.5 cm, abruptly acuminate : pinnules chartaceous, pale to dark olivaceous on drying, rounded-subtrapezid form-ligulate, 10-15 x 3-5 mm, lower margin rounded or meeting both lower and upper at approximately at right angles, the pinnules scarcely to subtruncate at apex. Fertile pinnules with 3-6 narrow incisions upto 2 mm deep, minutely erose; sterile pinnae with incisions of crenate lobes; upper pinnules gradually reduced and upper ones confluent veins immersed, but evident, 1-2 times formed, free or with a few anastomoses but row of the areoles rarely complete in one pinnule. Sori interrupted by the incisions, 1-4 mm long, indusium greenish-brown, subentire, reflexed.

Specimen examined : INDIA : (Nicobar Islands) on slopes of hills between 46-48 km 29.6.1984. *Sanjappa* & *Chatterjee* 17756 (CAL).

Distribution : India (Nicobar Islands), According to Kramer (1971) S. Thailand, in Malesia-Malay Peninsula (Perak).

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EMBELIA MACROCARPA KING & GAMBLE (MYRSINACEAE)—A NEW RECORD FOR INDIA FROM ANDAMAN ISLANDS

The genus *Embelia* Burm. f. is accredited with about 16 species in India (Santapau & Henry, 1973) of which only *E. microcalyx* Kurz was hitherto recorded for Andaman and Nicobar Islands (Vasudeva Rao, 1986). In the present paper, the occurrence of another species, *E. macrocarpa* King & Gamble in N. Andaman group of islands is recorded which is incidentally an addition to the Indian Flora also.

E. macrocarpa was described (1906) from Penang, Malay Peninsula where the species was reported to be very rare and little known (Ridley, 1923). In the Bay Islands too, the occurrence of the species is extremely rare, hence vulnerable to habitat destruction. The species is characterised by its large size fruits which distinguish it from other species of the genus. Interestingly, the climber is not seen in flowering in spite of several efforts by the author in different seasons. The only floral parts that could be seen are the persistent sepals along with the fruits. It is assumed that the taxon flowers very rarely which could be one of the reasons for its rare occurrence and reproduction. It is worth mentioning here that Ridley (1923) indicated) that *E. ridleyi* King & Gamble to have possibly been extinct in the Malay Peninsula flora.

A brief account of the taxon along with a plate is given here to facilitate the collection of this extremely rare and uncommon species especially in flowering condition in the field.

Embelia macrocarpa King & Gamble in Jour. As. Soc. Beng. 74(2) : 110. 1906 : Ridley, Fl. Malay Penins. 2 : 234. 1923.

A stout climbing shrub. Stem and branches